

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of a VPDES permit to Hanover County for the Strawhorn Subdivision Well Facility. This permit is being processed as a Minor, Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge (Outfall 001) consists of the backwash from a filtration system that removes iron and manganese from a ground water source. This permit action proposes to establish effluent limitations and monitoring requirements on the discharge.

1. Facility Name and Address:

Strawhorn Subdivision Well Facility
Hanover County Department of Public Utilities
7516 County Complex Road
Hanover, Virginia 23069-1530

Facility Location:

6507 Strawbank Drive
Strawhorn Subdivision on Rural Point Road (Route 643)

See **Attachment 1** – Studley topographic map (#126A) and road map

2. SIC Code: 4941 – Water Supply

3. Permit No. VA0058611

Expiration Date: March 19, 2009

4. Owner Contact: David F. Van Gelder
Chief of Operations and Maintenance
Hanover County Department of Public Utilities
Telephone Number: 804/365-6235
Facsimile Number: 804/365-6245
E-mail: dfvangelder@co.hanover.va.us

5. Application Complete Date: Technically Complete: December 4, 2008
Administratively Complete: February 5, 2009

Permit Drafted By: Ray Jenkins, Piedmont Regional Office
Date: January 26, 2009

Reviewed By: Emilee Carpenter
Curt Linderman

Date: January 27, 2009
January 30, 2009

6. Receiving Stream: Name: Unnamed tributary to Totopotomoy Creek
 Basin: York River
 Subbasin: NA
 Section: 3
 Class: III
 Special Standards: None

River Mile 8-XIT000.53

The receiving stream is shown to be an intermittent stream on the USGS topographic map. The statistical low flows are as follows:

1-Day, 30-Year Low Flow:	0
1-Day, 10-Year Low Flow:	0
7-Day, 10-Year Low Flow:	0
30-Day, 10-Year Low Flow:	0
30-Day, 5-Year Low Flow:	0
Harmonic Mean Flow:	0

Tidal: No
On 303(d) List: No

See **Attachment 2** – Flow Frequency Determination memorandum

7. Operator License Requirements: A licensed wastewater operator is not required.

8. Reliability Class: Not applicable

9. Permit Characterization: (Check as many as appropriate)

<input type="checkbox"/> Issuance	<input checked="" type="checkbox"/> Existing Discharge
<input checked="" type="checkbox"/> Reissuance	<input type="checkbox"/> Proposed Discharge
<input type="checkbox"/> Revoke & Reissue	<input checked="" type="checkbox"/> Effluent Limited
<input type="checkbox"/> Owner Modification	<input checked="" type="checkbox"/> Water Quality Limited
<input type="checkbox"/> Board Modification	<input type="checkbox"/> WET Limit
<input type="checkbox"/> Change of Ownership/Name	<input type="checkbox"/> Interim Limits in Permit
Effective Date:	<input type="checkbox"/> Interim Limits in Other Document (attached)
<input type="checkbox"/> Municipal	<input type="checkbox"/> Compliance Schedule Required
SIC Code(s):	<input type="checkbox"/> Site Specific WQ Criteria
<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Variance to WQ Standards
SIC Code(s): 4941	<input type="checkbox"/> Water Effects Ratio
<input type="checkbox"/> POTW	<input type="checkbox"/> Discharge to 303(d) Listed Segment
<input type="checkbox"/> PVOTW	<input type="checkbox"/> Toxics Management Program Required
<input type="checkbox"/> Private	<input type="checkbox"/> Toxics Reduction Evaluation
<input type="checkbox"/> Federal	<input type="checkbox"/> Pretreatment Program Required
<input type="checkbox"/> State	<input type="checkbox"/> Storm Water Management Plan
<input checked="" type="checkbox"/> Publicly-Owned Industrial	<input type="checkbox"/> Possible Interstate Effect

10. Wastewater Flow and Treatment

Outfall Number	Wastewater Source	Treatment	Flow
001	Backwash of pressure filters	Settling Lagoon	2,500 gallons per backwash*

* Estimate of effluent flow if a discharge were to occur

The well water treatment system removes soluble iron and manganese from well water by oxidation with sodium hypochlorite and filtration of the resulting insoluble precipitates. The precipitates are removed from the filter by backwashing the filter. The backwash is retained in a settling lagoon. There has not been a discharge from the lagoon in many years.

There is a floor drain in the filter building and a floor drain in the old well house that connect and discharge directly to a ditch along Strawbank Drive. The potential for a discharge from this drain to cause any problem is negligible. This drain is therefore, not addressed in the permit. See the Site Visit Report for additional information.

See **Attachment 3** – Site Visit Report and Site Diagram

11. Sludge Disposal: There has never been a need to remove accumulated solids from the lagoon. If necessary, solids would be removed, dewatered as necessary, and disposed in a landfill.
12. Material Storage: A 12% sodium hypochlorite solution is stored in a 15 gallon plastic carboy-type tank in the filter building. This solution is used to oxidize iron and manganese in the well water and to disinfect the potable water prior to distribution to users. (The filter sand was initially impregnated with potassium permanganate (known as "green sand") when purchased. The green sand in the pressure filter was last replaced approximately 15 years ago; consequently the potassium permanganate charge on the filter media is exhausted. Within the year the County is planning to completely renovate this water treatment facility, which may include green sand. As already mentioned, sand can be purchased already impregnated with potassium permanganate. Alternatively, the filter can be charged and regenerated on-site using a solution of potassium permanganate when backwashing the filter. If charged and regenerated on-site, potassium permanganate will also be stored.)
13. Ambient Water Quality Information: Ambient (or background) stream data are not needed because the receiving stream was determined to be dry at the theoretical low flows on which the need for effluent limitations is evaluated.

14. Antidegradation Review and Comments:

The State Water Control Board's Water Quality Standards include an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect those uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream was determined to be a Tier 1 waterbody. This determination is based on the intermittent nature of the stream where beneficial uses cannot be fully attained.

15. Site Inspection: February 5, 2004 by Christina Wood and Gina Kelly.

See Attachment 4.

16. Effluent Screening:

The following data were reported in the permit application. As there has not been a discharge of treated wastewater from the lagoon, a sample of the backwash was collected (i.e., the untreated wastewater entering the lagoon was sampled).

Pollutant	April 18, 2008*	October 30, 2008*
BOD ₅ (mg/L)	< 2	
COD (mg/L)	<15	
TOC (mg/L)	1.2	
TSS (mg/L)	38	
Ammonia (mg/L)	0.26	
Temperature (°C)	18.5	
pH (Standard Units)	7.8**	
Total Residual Chlorine (mg/L)	1.6	
Iron, Total (mg/L)	32.4	17.6
Manganese, Total (mg/L)	4.58	2.38
Iron, Dissolved (mg/L)		0.104
Manganese, Dissolved (mg/L)		0.012
Color (PCU)		8.5
Apparent Color (PCU)		>100

* Sample date

** From "Chain of Custody Record" for 4-18-08 samples

Ammonia and Total Residual Chlorine (TRC) must be evaluated to determine if water quality based limitations are needed. Included in **Attachment 5** is a spreadsheet (MSTRANTI) that calculates wasteload allocations based on effluent and receiving stream characteristic data. Because the receiving stream is considered a dry ditch for this evaluation, stream data are not needed and the mix values are 100%. The Outfall 001 flow of 2,500 gallons per day is the flow shown in item 10 above. The effluent pH and temperature values are from the permit application (see above table). The hardness value is assumed to be 25 mg/L as an actual hardness concentration was not provided. A concentration of 25 mg/L sets-up a worst case evaluation for metals.

Attachment 5 also includes STATS printouts which provide reasonable potential analyses for ammonia and TRC. Ammonia limitations are not indicated. See the STATS printout for TRC for a discussion of the TRC limitations.

Water Quality Standards for dissolved iron and dissolved manganese are applicable only in waters used for public water supply. Neither the unnamed tributary nor Totopotomoy Creek are designated as a public water supply. The reported concentrations of dissolved iron and dissolved manganese (see above table) however, are less than the standards that would be applicable – 0.30 mg/L and 0.050 mg/L, respectively.

17. Effluent Limitation Development:

Parameter	Limitation	Basis for Limitation
Flow	Monitoring only	NA
pH	6.0 to 9.0 Standard Units	Water Quality Standards
TSS	30 mg/L monthly average 60 mg/L daily maximum	Best Engineering Judgement*
Total Residual Chlorine	9.4 µg/L monthly average 19 µg/L daily maximum	Water Quality based limitations – see Attachment 5

* Standard DEQ limitations for discharges from water treatment plants.

18. Antibacksliding: All effluent limitations are as stringent as the limitations in the current permit (the permit reissued in 2004).

19. Special Conditions:

a. Special Condition B.1 – Notification Levels

This special condition is required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

This special condition is the same as in the 2004 permit.

b. Special Condition B.2 – Materials Handling/Storage

9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §§62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

This special condition is the same as in the 2004 permit.

c. Special Condition B.3. – Compliance Reporting

VPDES Permit Regulation 9 VAC 25-31-190 J.4 and 220.I authorize this special condition. This special condition establishes quantification levels for certain parameters and establishes protocols for calculation of reported values. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion.

Special Condition B.3 in the 2004 permit also addresses compliance reporting. The language in this permit has been revised to be consistent with current PRO guidance.

d. Special Condition B.4. – Operation & Maintenance (O&M) Manual

This special condition requires that the permittee develop an O&M Manual to include a sludge disposal plan. The Code of Virginia §62.1-44.16, the VPDES Permit Regulation at 9 VAC 25-31-190 E, and 40 CFR 122.41(e) require proper operation and maintenance of the permitted facility. Compliance with an approved O&M Manual ensures compliance with those requirements.

Special Condition B.4 in the 2004 permit also addresses the O&M Manual. The language in this permit has been revised to be consistent with current PRO guidance.

[Special Condition 5 in the 2004 permit required that a sludge handling and disposal plan be submitted to DEQ for review and approval. Such a plan was submitted. The County has now indicated however, that instead of disposing of any sludge at the septage dumping point in the County (also referred to as the County's "truck hauled waste facility"), the sludge would be dewatered if necessary and disposed in a landfill. Rather than addressing this change by special condition in the proposed permit, it will be addressed by submitting appropriate changes to the O&M Manual per Special Condition 4. The special condition requiring the submittal of a sludge plan has therefore, been deleted.]

e. Special Condition B.5 – Closure of Wastewater Treatment Facilities

This special condition establishes the requirement to submit a closure plan for wastewater treatment facilities if the facilities are being replaced or closed (reference State Water Control Board Statutes §62.1-44.19).

This is a new special condition in this permit.

f. Special Condition B.6 – TMDL Permit Reopener

This special condition addresses reopening of the permit, if necessary, to bring it into compliance with any applicable Total Maximum Daily Load (TMDL) approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Clean Water Act. The receiving stream was not assessed during the 2008 303(d) / 305(b) assessment cycle and is not on the 303(d) list for subsequent development of a TMDL. This reopener is included however, in all VPDES permits.

This is a new special condition in this permit.

20. Part II, Conditions Applicable to All VPDES Permits

The VPDES Permit Regulation at 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. NPDES Permit Rating Work Sheet: Total Score – 55. See **Attachment 6**.

22. Variances/Alternate Limits or Conditions: None

23. Changes to Permit: See **Table 1**.

24. Public Notice Information required by 9 VAC 25-31-280 B:

Comment period: Start Date: February 16, 2009 End Date: March 18, 2009

Publication Dates: February 16 and 23, 2009 in the *Richmond Times-Dispatch*

All pertinent information is on file and may be inspected or copied by contacting Ray Jenkins at:

Virginia Department of Environmental Quality (DEQ)
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060-6296

Telephone Number: 804/527-5037
Facsimile Number: 804/527-5106
Email: rrjenkins@deq.virginia.gov

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment.

25. Additional Comments:

- a. It is standard practice to require ground water monitoring around wastewater treatment lagoons. The pollutants of concern in this case are iron, manganese, and ammonia (see table in item 16 above). State ground water criteria have been established for total recoverable iron – 0.3 mg/L – and total recoverable manganese – 0.05 mg/L. Although the criteria are expressed as the total recoverable form of the metal, the dissolved form is more indicative of the potential for pollutant movement to ground water. The reported concentrations of the dissolved metal forms are below the criteria concentrations – 0.104 mg/L iron and 0.012 mg/L manganese. The ground water criterion for ammonia is 0.025 mg/L. Although the ammonia in the untreated wastewater exceeds the criterion, ammonia is expected to volatilize in the lagoon and degrade in the upper soil layers of the lagoon bottom given the intermittent discharge of wastewater into the lagoon and the drying of the lagoon between backwashes. Ground water monitoring is therefore, not required.
- b. Part I.A of the proposed permit requires a grab sample for TSS versus “5G / 8H” as indicated in the permit manual. That sample type is the same as in the 2004 permit. If a discharge were to occur at this facility, it would be of such short duration that only a single grab would be collected under the 5G / 8H requirement. The permit therefore, simply requires a grab sample. Also, the suggested frequency of sampling in the permit manual is once per month for all parameters. As in the 2004 permit, this permit requires that flow, pH, and TSS be determined once per 3 months, and that total residual chlorine be determined on each day of discharge. Those frequencies are adequate to characterize any discharge that occurs and are based on the judgment of the permit writer.
- c. Previous Board Action: None
- d. This facility is not subject to the General VPDES Watershed Permit Regulation for TN and TP Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia because it is not a significant discharger of nutrients and is not a new or expanding facility. The facility is not a significant discharger of

nutrients because the discharge is less than 500,000 gallons per day (non-tidal stream) and does not discharge a nutrient loading equivalent to a 500,000 gallon per day municipal facility.

e. Public Comment: No comments received.

26. Summary of attachments to this Fact Sheet:

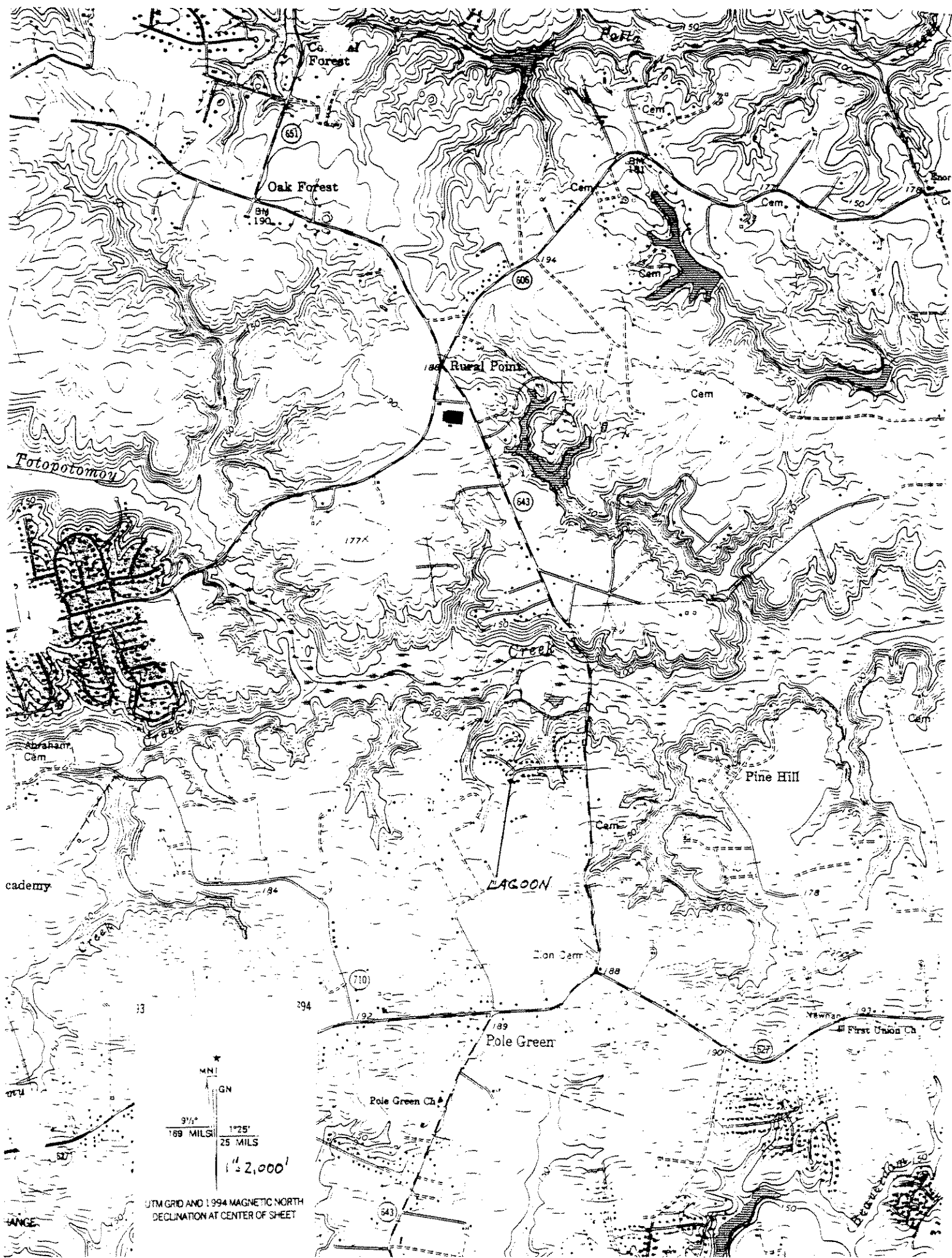
Attachment 1	Maps
Attachment 2	Flow Frequency Determination memorandum
Attachment 3	Site Visit Report and Site Diagram
Attachment 4	Site Inspection
Attachment 5	Evaluation of Water Quality Based Effluent Limitations (MSTRANTI and STATS printouts)
Attachment 6	NPDES Permit Rating Work Sheet

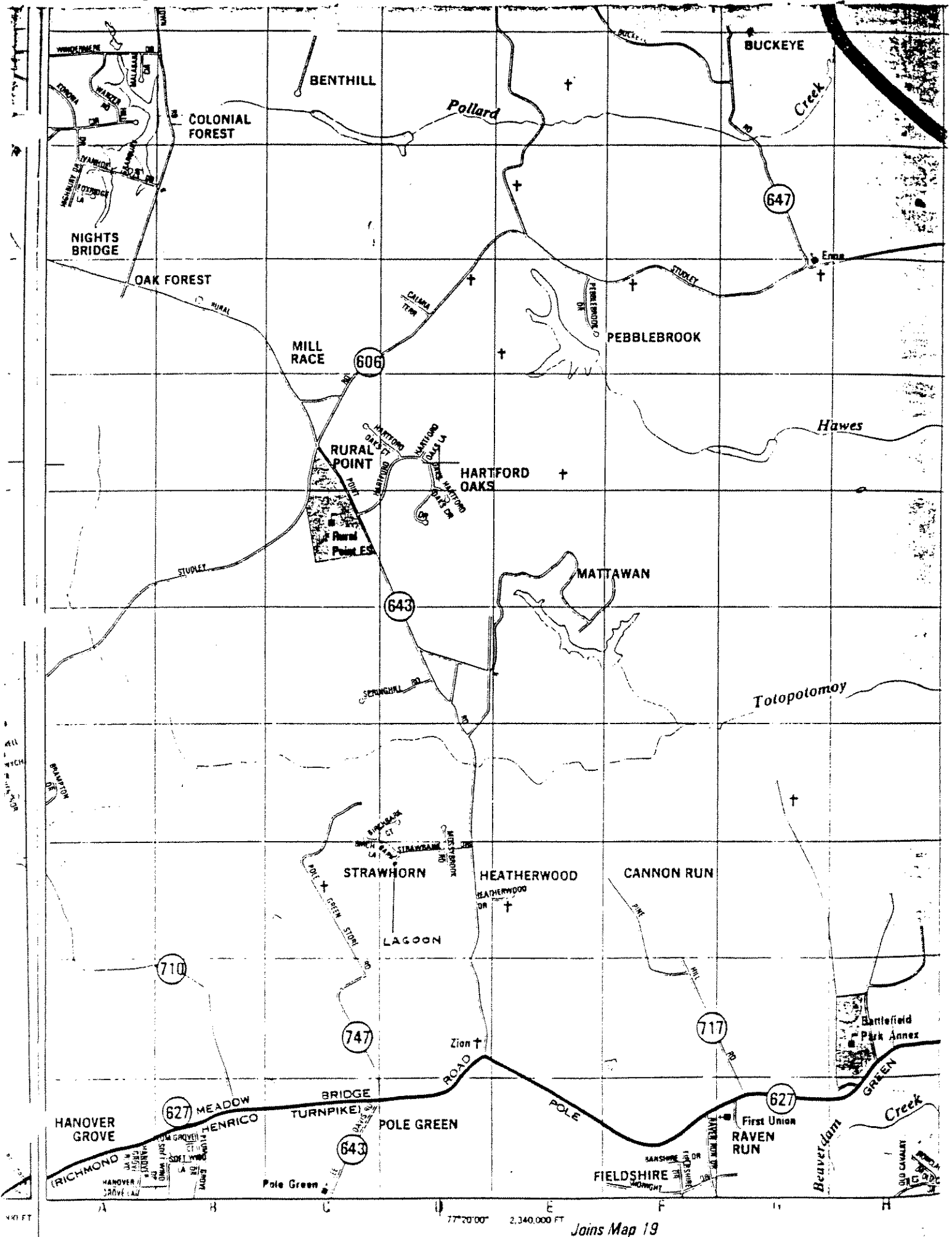
Table 1 – Permit Processing Change Sheet

PERMIT REFERENCE	PARAMETER CHANGED	MONITORING REQUIREMENT CHANGED		EFFLUENT LIMITS CHANGED		RATIONALE
		FROM	TO	FROM	TO	
Cover page	New format					New guidance
	Deleted "Department of Public Utilities" from owner name.					Application indicates Hanover County as owner.
	More specific Facility Location.					Clarity.
	Added descriptive language in I.A.1 preamble					Clarity
Part I.A.1	Total Residual Chlorine	1 / Day of Discharge	1 / Day	No Change	No Change	Formatting requirement. Also see new footnote (c).
	Revised wording of the items in the legend for clarity and added footnotes (a), (b), and (c).					Footnotes (a) and (c) help define the monitoring requirements. Footnote (b) implements new DEQ guidance (GM 06-2016) that requires that limitations be expressed using two significant figures.
Part I.B – Special Conditions	Special Conditions 3 and 4 were revised. Special Condition 5 in the 2004 permit addressing sludge disposal was deleted. Special Conditions 5 and 6 in the proposed permit are new special conditions.					See item 19

Attachment 1

Maps





Attachment 2


Flow Frequency Determination memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination
Strawhorn Subdivision Well Facility – VA0058611

TO: Jeremy Kazio

FROM: Jennifer V. Palmore, P.G. 

DATE: October 10, 2008

COPIES: File

The Strawhorn Subdivision Well Facility discharges to an unnamed tributary of Totopotomoy Creek in Hanover County, VA. The discharge is located at river mile 8-XIT000.53. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown to be an intermittent stream on the USGS Studley Quadrangle topographic map. The flow frequencies for intermittent streams are shown below.

Unnamed tributary at discharge point:

1Q30 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	

Due to its intermittent nature, the tributary is considered a Tier 1 water. It is appropriate to use effluent data, rather than ambient stream data, when calculating permit limits.

During the draft 2008 305(b)/303(d) Water Quality Assessment report, the tributary was not assessed for any of its designated uses; therefore it is considered a Category 3A water. Totopotomoy Creek is located approximately 0.5 mile downstream and is considered impaired of the Recreation Use. The bacteria TMDL has been completed for the watershed, however the Strawhorn facility is not expected to discharge bacteria and therefore was not addressed in the report.

If you have any questions concerning this analysis, please let me know.

Attachment 3

Site Visit Report and Site Diagram

Strawhorn Subdivision Well Facility Site Visit Report
January 23, 2009

Emilee Carpenter and I met Matt Ellinghaus with Hanover County Department of Public Utilities

The purpose of the visit was to clarify several points regarding site operations and to familiarize ourselves with the site in regard to permit reissuance.

The site diagram submitted with the permit renewal application seems to suggest that a discharge from the facility would cross Strawbank Drive to the north. The markings on the site diagram however, are only reference points so that the discharge pipe can be located if the site were overgrown. That is not an issue at present because the site has recently been cleaned-up. A discharge from the facility would remain in a concrete ditch on the south side of Strawbank Drive for approximately 250 yards before entering the unnamed tributary to Totopotomoy Creek. I requested that the site diagram be revised to show this flow pattern. The unnamed tributary is an intermittent stream as described in the Flow Frequency Determination memorandum dated October 10, 2008. There was flow in the tributary at the time of our visit. Totopotomoy Creek is a perennial stream.

Both the filter building and the old well house have floor drains that connect and discharge directly to a ditch along Strawbank Drive. Well and/or potable water sample taps are opened prior to collecting samples; creating routine discharges from the floor drains of perhaps 30 gallons. Such discharges are most likely absorbed into the ground in the area around the pipe outlet. Such discharges are inconsequential and do not need to be addressed in the permit. The location of the floor drains is shown on the attached diagram.

The only chemical stored on site is a 12% solution of sodium hypochlorite. The solution is stored in a 15 gallon plastic carboy-type tank in the filter building (location show on the attached diagram). Approximately 30 gallons of solution is used per month. This solution is added to the filter influent flow and is used both for disinfection and for oxidation of iron and manganese. The green sand in the pressure filter was last replaced approximately 15 years ago; consequently the potassium permanganate charge on the filter media is exhausted. The sodium hypochlorite solution, which is a weaker oxidizing agent than the potassium permanganate, provides adequate water treatment. Within the year however, the County is planning to completely renovate this water treatment facility. A decision has not yet been made to "return" to green sand at that time.

The filter was backwashed today. The wastewater level in the settling lagoon was approximately 12 inches below the top of the standpipe at which level a discharge would occur. The discharge pipe from the lagoon is equipped with a valve. The valve is always closed. There has not been a discharge from the lagoon in over 20 years. The lagoon and surrounding area are well maintained.

The well facility serves approximately 60 homes.

No issues were identified that preclude reissuance of the permit or that prompt any material changes to the current permit.

Strawhorn Subdivision Well Facility
January 23, 2009 Site Visit Report
Page 2 of 2

We discussed converting this permit to the new general permit for water treatment plants. At present, DEQ staff interpretation of special condition #1 in the general permit that the facility must be visited 7 days per week would prompt the County to maintain the individual permit.

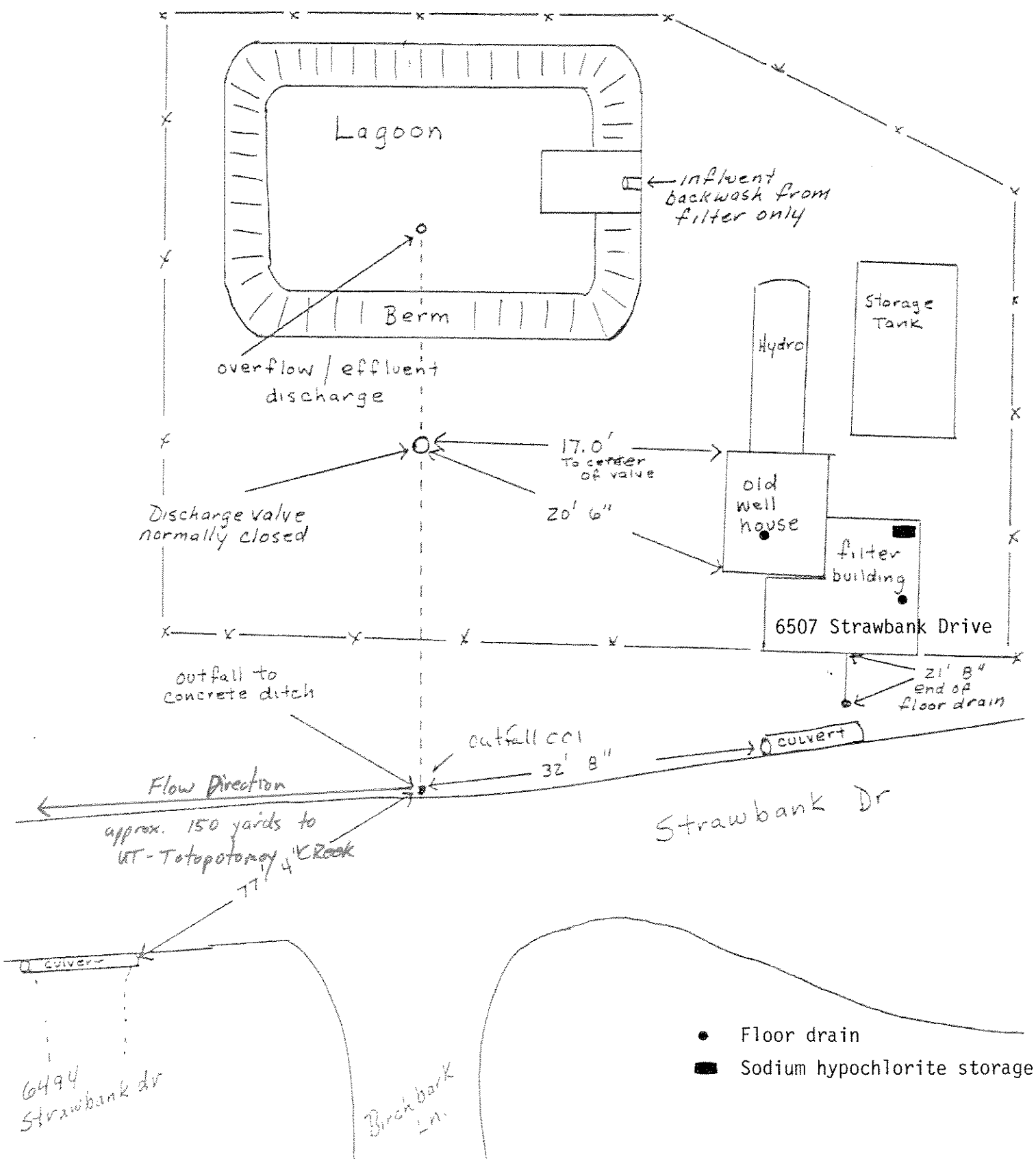
Ray Jenkins
January 26, 2009

NOT TO SCALE

Revised

1-28-09 MRE

Strawhorn Lagoon/well facility



Attachment 4

Site Inspection

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Piedmont Regional Office WASTEWATER FACILITY INSPECTION REPORT

FACILITY NAME:	<u>Strawhorn Subdivision Well Facility</u>	INSPECTOR:	<u>Christina Wood</u>
PERMIT No.:	<u>VA0058611</u>	INSPECTION DATE:	<u>February 5, 2004</u>
TYPE OF FACILITY:	<u>Industrial - Small</u>	REPORT COMPLETED:	<u>February 18, 2004</u>
COUNTY/CITY:	<u>Hanover County</u>	UNANNOUNCED INSPECTION:	<u>NO</u>
REVIEWED BY:			
PRESENT DURING INSPECTION:	<u>Mike Whitley, Bill Holland and Dan Gavin - Hanover County DPU</u> <u>Gina Ebbett - DEQ Permit Writer</u>		

I. OPERATIONAL UNIT REVIEW AND CONDITION:

This well facility serves the surrounding subdivision, treating 10,000 to 15,000 gpd water at a rate of approximately 50 gpm. A greensand filter is used to remove iron and manganese from the groundwater. The well water is metered by a turbometer and chlorine (hypochlorite) is injected prior to the greensand filter. Treated water then enters the static tank and travels by a booster pump to the hydro tank which supplies approximately 60 pounds of pressure in the potable distribution system.

The filter is backwashed as needed using chlorinated treated water, approximately every 2 weeks, based on filter pressure. The back wash is performed manually until the backwash water entering the lagoon is straw colored, approximately 5 – 10 minutes. The filter is then "rewashed" – treated water is run through the filter to settle the media prior to making water again. The rewash water is also diverted to the lagoon. Approximately 2000 gallons of treated water is used in each backwash/rewash cycle.

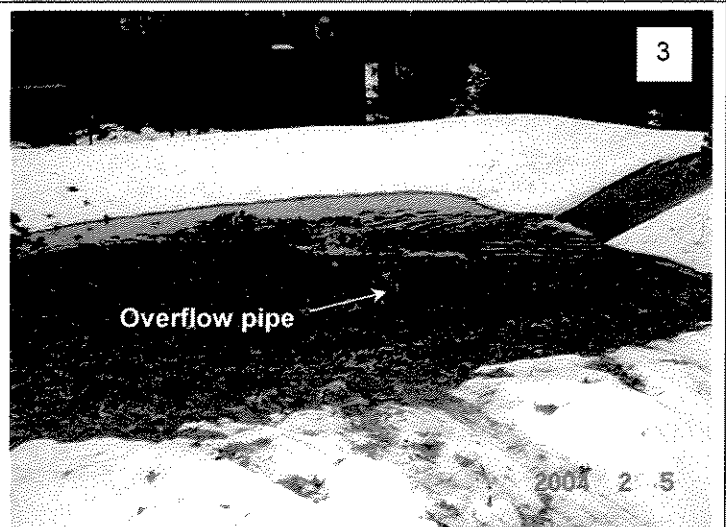
Backwash settling Lagoon

The lagoon is approximately 15 feet by 15 feet at pool capacity (top of standpipe where discharge would occur). The backwash wastewater spills onto a concrete splash pad, to prevent berm erosion. The lagoon was dry at the start of the inspection and there was very little evidence of accumulated sludge. The inside of the lagoon has a grass vegetative cover established. The grounds were well maintained. The operator backwashed the filter during the inspection. After the backwash and rewash, the water level in the lagoon came to just below the top of the stand pipe.

There is a valve access (within the fenced area) which controls a discharge from the structure. The valve is kept in the closed position so that no discharge may occur; a valve key must be used to operate this valve. The operators have not had to discharge this lagoon. The water is allowed to evaporate, and possibly perk, between backwashes. The outfall pipe is located in the storm ditch along the street at the front of the property.

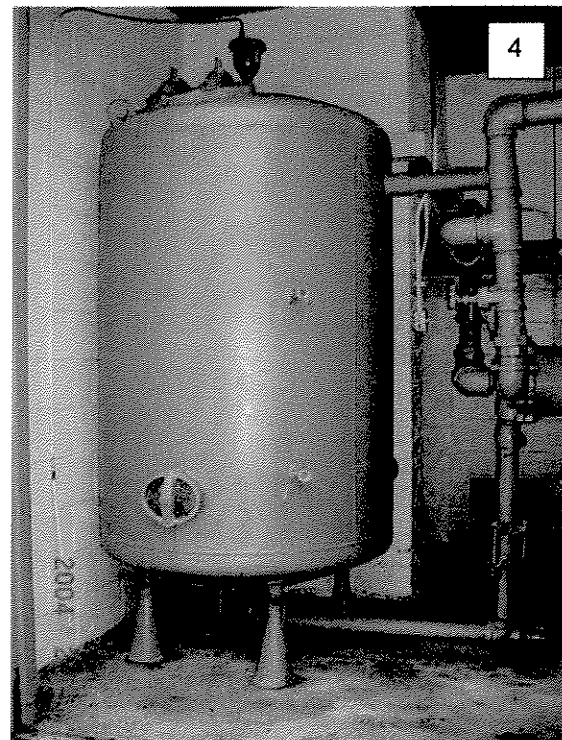
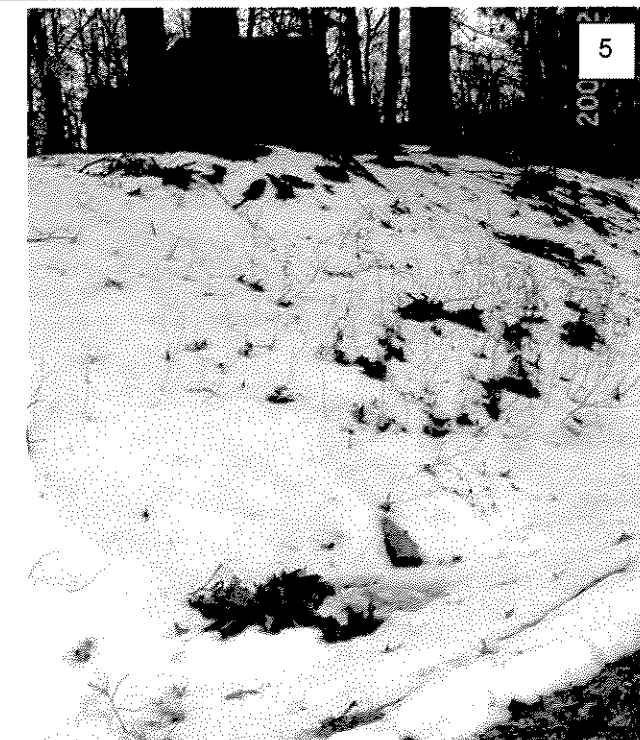
II. ULTIMATE DISPOSAL OF SOLIDS:

To date no sludge has been removed from the lagoon - at the time of the inspection accumulation was minimal. If sludge were to be removed, it would be pumped and disposed of at the county's truck hauled waste facility, in accordance with the Sludge Management Plan.



Photos clockwise from top left:

1. Initial backwash – presence of iron is evident.
2. Rewash cycle – the water is clear.
3. The Lagoon – leaves had collected on the bottom, now floating on the backwash water.
4. The greensand filter in the filter building.
5. Outfall 001 discharges to the ditch at the front of the lot. The filter building is at the top of the hill in the photo.



III. FIELD DATA: No Discharge

Flow:	<u>No Discharge</u>	Dissolved Oxygen:	___mg/L	Contact Chlorine Res.:	___mg/L
pH:	___S.U.	Final Chlorine Res.:	___mg/L	Temperature:	___°C
Calibration Time/Initials/documentation:					
Condition of Effluent:	<u>No Discharge</u>				
Condition of Receiving Stream:	<u>Storm ditch was clean with a thin layer of snow.</u>				
Samples Collected during the inspection:	<u>N/A</u>				

IV. PLANT OPERATIONS AND MAINTENANCE:

Operations and Maintenance Manual:	<u>Submitted October 1, 2003</u>
Class and Number of Licensed Operators:	<u>N/A</u>
Alarm Systems and Alternate Power:	<u>N/A</u>
Any bypassing since last inspection?	<u>No</u>
When was the RPZ device last checked?	<u>N/A</u>
Name, number and description of pump stations:	<u>N/A</u>

V. COMMENTS:

The staff would like to replace the plastic standpipe in the Lagoon with a metal pipe so that it will not be damaged by the mowers and weed eaters used to maintain the grass in the lagoon. Because this replacement does not change the operation of the Lagoon discharge, and would be considered a replacement "in-kind," no approval from this office is required.

Items evaluated during this inspection include (check all that apply):

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Operational Units
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	O & M Manual
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Maintenance Records
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
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<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Pathogen Reduction & Vector Attraction Reduction
Sludge Disposal Plan
Groundwater Monitoring Plan
Storm Water Pollution Prevention Plan
Permit Special Conditions
Permit Water Quality Chemical Monitoring
Laboratory Records (see Lab Report)

VI. GENERAL RECOMMENDATIONS:

1. There are no general recommendations at this time.

VII. COMPLIANCE RECOMMENDATIONS/REQUEST FOR CORRECTIVE ACTION:

1. There are no compliance recommendations at this time.

Attachment 5

Evaluation of Water Quality Based Effluent Limitations (MSTRANTI and STATS printouts)

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Strawhorn Well Facility**
Receiving Stream: **UT to Tokopotomy Creek**

Permit No.: **VA0058611**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO₃) =
90% Temperature (Annual) =
90% Temperature (Wet season) =
90% Maximum pH =
10% Maximum pH =
Tier Designation (1 or 2) =
Public Water Supply (PWS) Y/N? =
Trout Present Y/N? =
Early Life Stages Present Y/N? =

mg/L
deg C
deg C
SU
SU
y
n
n
y

Stream Flows

1Q10 (Annual) =
7Q10 (Annual) =
30Q10 (Annual) =
1Q10 (Wet season) =
30Q10 (Wet season) =
30Q5 =
Harmonic Mean =
Annual Average =

Mixing Information

Annual - 1Q10 Mix =
- 7Q10 Mix =
- 30Q10 Mix =
Wet Season - 1Q10 Mix =
- 30Q10 Mix =

Effluent Information

Mean Hardness (as CaCO₃) =
90% Temp (Annual) =
90% Temp (Wet season) =
90% Maximum pH =
10% Maximum pH =
Discharge Flow =

25 mg/L
18.5 deg C
deg C
7.6 SU
0.0025 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	na
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	na
Acrylonitrile ^C	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	na
Aldrin ^C	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	3.0E+00	--	na
Ammonia-N (mg/l) (Yearly)	0	1.21E+01	2.46E+00	na	--	1.2E+01	2.5E+00	na	--	1.2E+01	2.5E+00	na	--	1.2E+01	2.5E+00	na
Ammonia-N (mg/l) (High Flow)	0	1.21E+01	3.18E+00	na	--	1.2E+01	3.2E+00	na	--	1.2E+01	3.2E+00	na	--	1.2E+01	3.2E+00	na
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	na
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	na
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Benzene ^C	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	na
Benztidine ^C	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	na
Benzo (a) anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na
Benzo (b) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na
Benzo (k) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na
Benzo (a) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na
Bis(2-Chloroethyl) Ether	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	na
Bromofom ^C	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	na
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	na
Cadmium	0	8.2E-01	3.9E-01	na	--	8.2E-01	3.9E-01	na	--	8.2E-01	3.9E-01	na	--	8.2E-01	3.9E-01	na
Carbon Tetrachloride ^C	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	na
Chlordane ^C	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Chlorodibromomethane ^c	0	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na
Chloroform ^c	0	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	--	--	--	--	--	--	8.3E-02	4.1E-02	na
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	--	--	--	--	--	--	1.8E+02	2.4E+01	na
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	--	--	--	--	--	--	1.6E+01	1.1E+01	na
Chromium, Total	0	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na
Chrysene ^c	0	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	--	--	--	--	--	--	3.6E+00	2.7E+00	na
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	--	--	--	--	--	--	2.2E+01	5.2E+00	na
DDD ^c	0	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na
DDE ^c	0	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na
DDT ^c	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	--	--	--	--	--	--	1.1E+00	1.0E-03	na
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	--	--	--	--	--	--	--	1.0E-01	na
Dibenz(a,h)anthracene ^c	0	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na
Diethyl phthalate	0	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na
Dichloromethane	0	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na
(Methylene Chloride) ^c	0	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na
1,2-Dichlorobenzene	0	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na
1,3-Dichlorobenzene	0	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na
1,4-Dichlorobenzene	0	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na
3,3-Dichlorobenzidine ^c	0	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na
Dichlorobromomethane ^c	0	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na
1,2-Dichloroethane ^c	0	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na
1,1-Dichloroethylene	0	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na
1,2-trans-dichloroethylene	0	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na
2,4-Dichlorophenol	0	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na
1,3-Dichloropropene	0	--	--	na	1.4E-03	2.4E-01	5.6E-02	--	--	--	--	--	--	2.4E-01	5.6E-02	na
Dieldrin ^c	0	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	--	--	na
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na
Di-2-Ethylhexyl Phthalate ^c	0	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na
2,4-Dinitrophenol	0	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	--	--	--	--	--	--	--	--	na
2,4-Dinitrotoluene ^c	0	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na
Dioxin (2,3,7,8- tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	--	--	--	--	--	--	--	--	na
1,2-Diphenylhydrazine ^c	0	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	--	--	--	--	--	--	2.2E-01	5.6E-02	na
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	--	--	--	--	--	--	2.2E-01	5.6E-02	na
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	--	--	--	--	--	--	8.6E-02	3.6E-02	na
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na
Fluoranthene	0	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na
Fluorene	0	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na
Foaming Agents	0	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	1.0E-02	na
Heptachlor ^c	0	5.2E-01	3.8E-03	na	2.1E+03	5.2E-01	3.8E-03	na	--	--	--	--	--	5.2E-01	3.8E-03	na
Heptachlor Epoxide ^c	0	5.2E-01	3.8E-03	na	1.1E+03	5.2E-01	3.8E-03	na	--	--	--	--	--	5.2E-01	3.8E-03	na
Hexachlorobenzene ^c	0	--	--	na	7.7E+03	--	--	na	--	--	--	--	--	--	--	na
Hexachlorobutadiene ^c	0	--	--	na	5.0E+02	--	--	na	--	--	--	--	--	--	--	na
Hexachlorocyclohexane	0	--	--	na	1.3E+01	--	--	na	--	--	--	--	--	--	--	na
Alpha-BHC ^c	0	--	--	na	4.6E+01	--	--	na	--	--	--	--	--	--	--	na
Hexachlorocyclohexene	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	--	--	--	--	--	9.5E-01	--	na
Beta-BHC ^c	0	--	--	na	1.7E+04	--	--	na	--	--	--	--	--	--	--	na
Hexachlorocyclohexane	0	--	--	na	8.9E+01	--	--	na	--	--	--	--	--	--	--	na
Gamma-BHC ^c (Lindane)	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	2.0E+00	na
Hexachlorocyclopentadiene	0	--	--	na	4.9E-01	--	--	na	--	--	--	--	--	--	--	na
Hexachloroethane ^c	0	--	--	na	2.6E+04	--	--	na	--	--	--	--	--	--	--	na
Hydrogen Sulfide	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Isophorone ^c	0	--	--	na	2.6E+04	--	--	na	--	--	--	--	--	--	--	na
Kepon	0	2.0E+01	0.0E+00	na	--	2.0E+01	0.0E+00	na	--	2.0E+01	0.0E+00	na	--	2.0E+01	0.0E+00	na
Lead	0	--	2.3E+00	na	--	--	2.3E+00	na	--	--	--	2.3E+00	na	--	--	na
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	1.0E-01	na	--	--	na
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	na	--	--	na
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	--	1.4E+00	7.7E-01	na	--	1.4E+00	7.7E-01	na
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	--	--	--	--	--	--	--	na
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	3.0E-02	na
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	0.0E+00	na
Monochlorobenzene	0	5.6E+01	6.3E+00	na	2.1E+04	5.6E+01	6.3E+00	na	--	5.6E+01	6.3E+00	na	--	5.6E+01	6.3E+00	na
Nickel	0	--	--	na	4.6E+03	--	--	na	--	--	--	--	--	--	--	na
Nitrate (as N)	0	--	--	na	1.9E+03	--	--	na	--	--	--	--	--	--	--	na
Nitrobenzene	0	--	--	na	8.1E+01	--	--	na	--	--	--	--	--	--	--	na
N-Nitrosodimethylamine ^c	0	--	--	na	1.6E+02	--	--	na	--	--	--	--	--	--	--	na
N-Nitrosodiphenylamine ^c	0	--	--	na	1.4E+01	--	--	na	--	--	--	--	--	--	--	na
N-Nitrosodi-n-propylamine ^c	0	6.6E-02	1.3E-02	na	--	6.6E-02	1.3E-02	na	--	6.6E-02	1.3E-02	na	--	6.6E-02	1.3E-02	na
Parathion	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	1.4E-02	na
PCB-1016	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB-1221	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB-1232	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB-1242	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB-1248	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB-1254	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB-1260	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
PCB Total ^c	0	--	--	na	1.7E+03	--	--	na	--	--	--	--	--	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Pentachlorophenol ^c	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na
Phenol	0	--	--	na	4.5E+06	--	--	na	4.5E+06	--	--	na	4.5E+06	--	--	na
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	na
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	na
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	na
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	na
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	na
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	3.2E-01	--	na	--	3.2E-01	--	na
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
1,1,2,2-Tetrachloroethane ^c	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	na
Tetrachloroethylene ^c	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	na
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	na
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	na
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Toxaphene ^c	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	na
1,1,2-Trichloroethane ^c	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	na
Trichloroethylene ^c	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	na
2,4,6-Trichlorophenol ^c	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	na
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Vinyl Chloride ^c	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Zinc	0	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipalities
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1C10 for Acute, 30Q10 for Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

STATS for Ammonia

Facility = Strawhorn Well Facility
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 12 mg/L
WLAc = NA
Q.L. = 0.2 mg/L
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = .26 mg/L
Variance = .024336 mg/L
C.V. = 0.6
97th percentile daily values = .632688 mg/L
97th percentile 4 day average = .432585 mg/L
97th percentile 30 day average = .313573 mg/L
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

0.26 mg/L

Backwash occurs once every two weeks, therefore, only the acute wasteload allocation was entered above. This is consistent with guidance in the Permit Manual (Section IN-5, page 28). An ammonia concentration of 0.26 mg/L was reported in the permit renewal application for the filter backwash that is discharged into the settling lagoon.

STATS for Total Chlorine Residual

Facility = Strawhorn Well Facility
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19 µg/L
WLAc = NA
Q.L. = 100 µg/L
samples/month = 2
samples/week = 1

Summary of Statistics:

observations = 1
Expected Value = 20000 µg/L
Variance = 1440000 µg/L
C.V. = 0.6
97th percentile daily values = 48668.3 µg/L
97th percentile 4 day average = 33275.8 µg/L
97th percentile 30 day average = 24121.0 µg/L
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 19 µg/L
Average Weekly Limit = 19 µg/L
Average Monthly Limit = 15.4504957800255 µg/L

The data are:

20000 µg/L

Backwash occurs once every two weeks, therefore, only the acute wasteload allocation was entered above. This is consistent with guidance in the Permit Manual (Section IN-5, page 28). A limitation was forced using 20,000 µg/L per Guidance Memorandum 00-2011 and the Permit Manual.

Note that the above monthly average limitation of 15 µg/L is higher than the current monthly average limitation of 9.4 µg/L. Anti-backsliding rules do not allow for the relaxation of the limitation. A monthly average limitation of 9.4 µg/L will therefore, be maintained. Attached is the STATS printout (labeled "Attachment E") from the previous permit reissuance showing the source of the 9.4 µg/L monthly average limitation. Note that the acute wasteload allocation of 0.019 mg/L (19 µg/L) is the same as in this evaluation. The monthly average limitation changed because of the number of samples per month that was entered in Attachment E. Two samples per month as cited above is consistent with a backwash every two weeks. Thirty samples per month as indicated in Attachment E is not correct.

A total chlorine residual of 1,600 µg/L was reported in the permit renewal application for the filter backwash that is discharged into the settling lagoon. (Entering 1,600 µg/L in STATS results in the same limitations as above.) The chlorine residual will naturally dissipate given the holding time in the lagoon, ensuring compliance with the proposed effluent limitations. Given the potential for chlorine to be present however, limitations are appropriate.

Attachment E

Effluent Limitation Analysis for TRC

TRC Analysis

Facility = VA0058611 Strawhorn Well

Chemical = TRC

Chronic averaging period = 4

WLAa = 0.019

WLAc =

Q.L. = .1

samples/mo. = 30

samples/wk. = 7

Summary of Statistics:

observations = 1

Expected Value = 20

Variance = 144

C.V. = 0.6

97th percentile daily values = 48.6683

97th percentile 4 day average = 33.2758

97th percentile 30 day average = 24.1210

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 0.019

Average Weekly limit = 1.16034369282885E-02

Average Monthly Limit = 9.4168021134859E-03

The data are:

20

Note: Because this facility discharges infrequently, only the acute WLA was used to determine the appropriate TRC limits (per Permit Manual pg IN- 163). 20 mg/L was used to force a limitation per Guidance Memorandum 00-2011 and Permit Manual pg IN-63.

Attachment 6

NPDES Permit Rating Work Sheet

NPDES Permit Rating Work Sheet

- ☐ Regular Addition
- ☐ Discretionary Addition
- ☐ Score change, but no status change
- ☐ Deletion

NPDES No.: V A 0 0 5 8 6 1 1

Facility Name:

STRAWHORN SUBDIVISION WELL FACILITY

City: HANDOVER COUNTY

Receiving Water: UT TOTOPOTOMOY CREEK

Reach Number:

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

☐ YES; score is 600 (stop here) ☒ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

- ☐ YES; score is 700 (stop here)
☒ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: Primary SIC Code: 4 9 4 1

Other SIC Codes:

Industrial Subcategory Code: (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	15	<input checked="" type="checkbox"/> 7.	7	35
<input type="checkbox"/> 1.	1	5	<input type="checkbox"/> 4.	4	20	<input type="checkbox"/> 8.	8	40
<input type="checkbox"/> 2.	2	10	<input type="checkbox"/> 5.	5	25	<input type="checkbox"/> 9.	9	45
			<input type="checkbox"/> 6.	6	30	<input type="checkbox"/> 10.	10	50

Code Number Checked: 7

Total Points Factor 1: 35

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A—Wastewater Flow Only Considered

Wastewater Type (See Instructions)	Code	Points
Type I: Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow >10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input type="checkbox"/> 14	30
Type II: Flow <1 MGD	<input checked="" type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input type="checkbox"/> 22	20
Flow >5 to 10 MGD	<input type="checkbox"/> 23	30
Flow >10 MGD	<input type="checkbox"/> 24	50
Type III: Flow <1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow >5 to 10 MGD	<input type="checkbox"/> 33	20
Flow >10 MGD	<input type="checkbox"/> 34	30

Section B—Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow	Code	Points
TYPE I/III:	< 10%	<input type="checkbox"/> 41	0
	≥ 10% to <50%	<input type="checkbox"/> 42	10
	≥ 50%	<input type="checkbox"/> 43	20
Type II:	< 10%	<input type="checkbox"/> 51	0
	≥ 10% to <50%	<input type="checkbox"/> 52	20
	≥ 50%	<input type="checkbox"/> 53	30

Code Checked from Section A or B: 21

Total Points Factor 2: 10

NPDES Permit Rating Work Sheet

FACTOR 3: Conventional Pollutants (only when limited by the permit)

NPDES No.: V A 0 0 5 8 6 1 1

A. Oxygen Demanding Pollutant: (check one)

☐ BOD

☐ COD

☒ Other: N/A

Permit Limits: (check one)

☐

<100 lbs/day

Code

Points

1

0

☐

100 to 1000 lbs/day

2

5

☐

>1000 to 3000 lbs/day

3

15

☐

>3000 lbs/day

4

20

Code Checked:

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)

☒

<100 lbs/day

Code

Points

1

0

☐

100 to 1000 lbs/day

2

5

☐

>1000 to 5000 lbs/day

3

15

☐

>5000 lbs/day

4

20

Code Checked: 1

Points Scored: 0

C. Nitrogen Pollutant: (check one)

☐ Ammonia

☒ Other: N/A

Permit Limits: (check one)

☐

Nitrogen Equivalent

Code

Points

☐

<300 lbs/day

1

0

☐

300 to 1000 lbs/day

2

5

☐

>1000 to 3000 lbs/day

3

15

☐

>3000 lbs/day

4

20

Code Checked:

Points Scored: 0

Total Points Factor 3: 0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

☐ YES (If yes, check toxicity potential number below)

☒ NO (If no, go to Factor 5)

Determine the human health toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column — check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	0	<input type="checkbox"/> 7.	7	15
<input type="checkbox"/> 1.	1	0	<input type="checkbox"/> 4.	4	0	<input type="checkbox"/> 8.	8	20
<input type="checkbox"/> 2.	2	0	<input type="checkbox"/> 5.	5	5	<input type="checkbox"/> 9.	9	25
			<input type="checkbox"/> 6.	6	10	<input type="checkbox"/> 10.	10	30

Code Number Checked:

Total Points Factor 4: 0

NPDES Permit Rating Work Sheet

FACTOR 5: Water Quality Factors

NPDES No.: VA0058611

- A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge?

<input checked="" type="checkbox"/> Yes	Code 1	Points 10
<input type="checkbox"/> No	Code 2	Points 0

- B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

<input checked="" type="checkbox"/> Yes	Code 1	Points 0
<input type="checkbox"/> No	Code 2	Points 5

- C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

<input type="checkbox"/> Yes	Code 1	Points 10
<input checked="" type="checkbox"/> No	Code 2	Points 0

Code Number Checked: A 1 B 1 C 2
 Points Factor 5: A 10 + B 0 + C 0 = 10 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

- A. Base Score: Enter flow code here (from Factor 2): 21

Enter the multiplication factor that corresponds to the flow code: 0.1

Check appropriate facility HPRI Code (from PCS):

HPRI #	Code	HPRI Score
<input type="checkbox"/> 1	1	20
<input type="checkbox"/> 2	2	0
<input type="checkbox"/> 3	3	30
<input checked="" type="checkbox"/> 4	4	0
<input type="checkbox"/> 5	5	20

HPRI code checked: 4

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) 0 x (Multiplication Factor) 0.1 = 0 (TOTAL POINTS)

- B. Additional Points — NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

<input type="checkbox"/> Yes	Code 1	Points 10
<input type="checkbox"/> No	Code 2	Points 0

N/A

- C. Additional Points — Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see instructions)

<input type="checkbox"/> Yes	Code 1	Points 10
<input type="checkbox"/> No	Code 2	Points 0

N/A

Code Number Checked: A 4 B C
 Points Factor 6: A 0 + B + C = 0 TOTAL

NPDES Permit Rating Work Sheet

SCORE SUMMARY

NPDES No.: VA0058611

Factor	Description	Total Points
1	Toxic Pollutant Potential	<u>35</u>
2	Flow/Streamflow Volume	<u>10</u>
3	Conventional Pollutants	<u>0</u>
4	Public Health Impacts	<u>0</u>
5	Water Quality Factors	<u>10</u>
6	Proximity to Near Coastal Waters	<u>0</u>
TOTAL (Factors 1 through 6)		<u>55</u>

S1. Is the total score equal to or greater than 80? ☐ Yes (Facility is a major) ☒ No

S2. If the answer to the above question is no, would you like this facility to be discretionary major?

☒ No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason: _____

NEW SCORE: 55

OLD SCORE: 70

Ray Jenkins
 Permit Reviewer's Name

(804) 527-5037
 Phone Number

1-15-2009
 Date